

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

STANDING STOCKS OF FISHES
IN SECTIONS OF LITTLE GRIZZLY CREEK
PLUMAS COUNTY, 1990

by

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STANDING STOCKS OF FISHES IN SECTIONS OF LITTLE GRIZZLY CREEK, PLUMAS COUNTY, 1990

INTRODUCTION

Trout were caught in Little Grizzly Creek (Figure 1) in September, 1990. Little Grizzly Creek was sampled as part of a continuing program sponsored by Department of Water Resources (DWR) and designed to investigate the status of trout populations in tributaries to Indian Creek. Other tributaries sampled as part of this program include Red Clover Creek, Hungry Creek and Ward Creek. These creeks are sampled to provide information on trout life history and growth that will allow Indian Creek to be managed in a manner that will provide the best habitat for trout reproduction and survival. This is the first time Little Grizzly Creek has been sampled as part of the Indian Creek studies.

METHODS

Standing stocks of fishes were estimated in one station in Little Grizzly Creek (Figure 1) in Plumas County. Fish were sampled in riffles and small pools. The length, average width, and average depth of each section were measured with a cloth tape (Appendix 1). Fish were captured with a battery-powered backpack electroshocker (Smith-Root, Type VII) in stream sections blocked by seines. Captured fish were removed from the net-enclosed section on each pass.

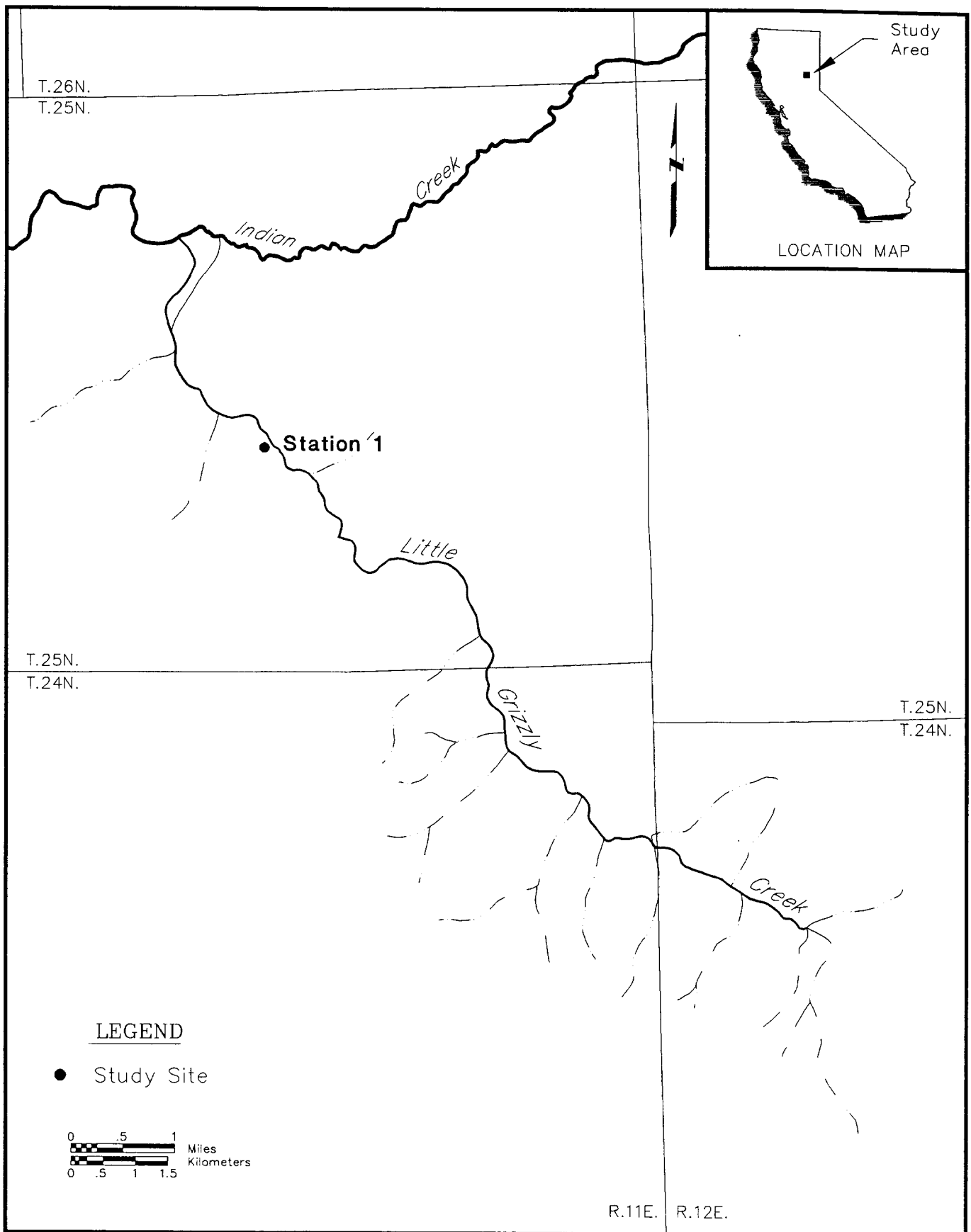


Figure 1. Station sampled to estimate standing crop of trout in Little Grizzly Creek, 1990.

Standing stock estimates were developed using the two-count method of Seber and LeCren (1967) or the multiple-pass method of Leslie and Davis (1939) with limits of confidence computed using a formula proposed by DeLury (1959).

The weights of rainbow trout (Oncorhynchus mykiss) were determined by displacement. Fork length (FL) of each fish was measured to the nearest millimeter. No scale was taken.

Standing crops of rainbow trout were calculated. Length and weight relationships were determined for rainbow trout. The coefficient of condition and 95 percent confidence intervals were calculated for rainbow trout.

TABLE 2. Estimate of Rainbow Trout Standing Crop in Little Grizzly Creek, Plumas County, 1990.

Distance above Indian Creek Confluence (km)	Population Estimate	95% Confidence Estimate	Biomass (g/m ²)	Estimate of Catchable Trout (≥127mm FL)	Biomass of Catchable Trout (g/m ²)
3.2	131	122-141	4.6	17	2.0

Most trout caught were less than 100 mm FL. Only one was greater than 200 mm FL (Figure 2 and Appendix 2)

The relationship between fork length (L) and weight (W) of rainbow trout for Little Grizzly Creek is:

$$\text{Log}_{10} W = -4.7 + 2.9 \text{ Log}_{10} L$$

$$r^2 = 0.98$$

$$N = 122 \text{ (Figure 3 and Appendix 2)}$$

Coefficient of Condition

The average coefficient of condition for 122 rainbow trout was 1.0844.

DISCUSSION

We sampled five stations in four streams in 1990. All were tributaries to Indian Creek. All the streams held rainbow trout. Population estimates averaged 81 rainbow trout per station. Biomass averaged 4.2 g/m² (Table 5). Biomass average was calculated to allow comparisons between values measured at each stream with the mean values we have computed for small tributaries to Indian Creek.

Hungry Creek was the smallest creek we sampled and Red Clover Creek was the largest. Red Clover Creek held larger trout than the other streams as reflected by a higher than average biomass and fewer than average trout. Hungry Creek trout were smaller than we see in most streams. It held an average number of trout, but biomass was the lowest we measured. We have noticed that small streams tend to

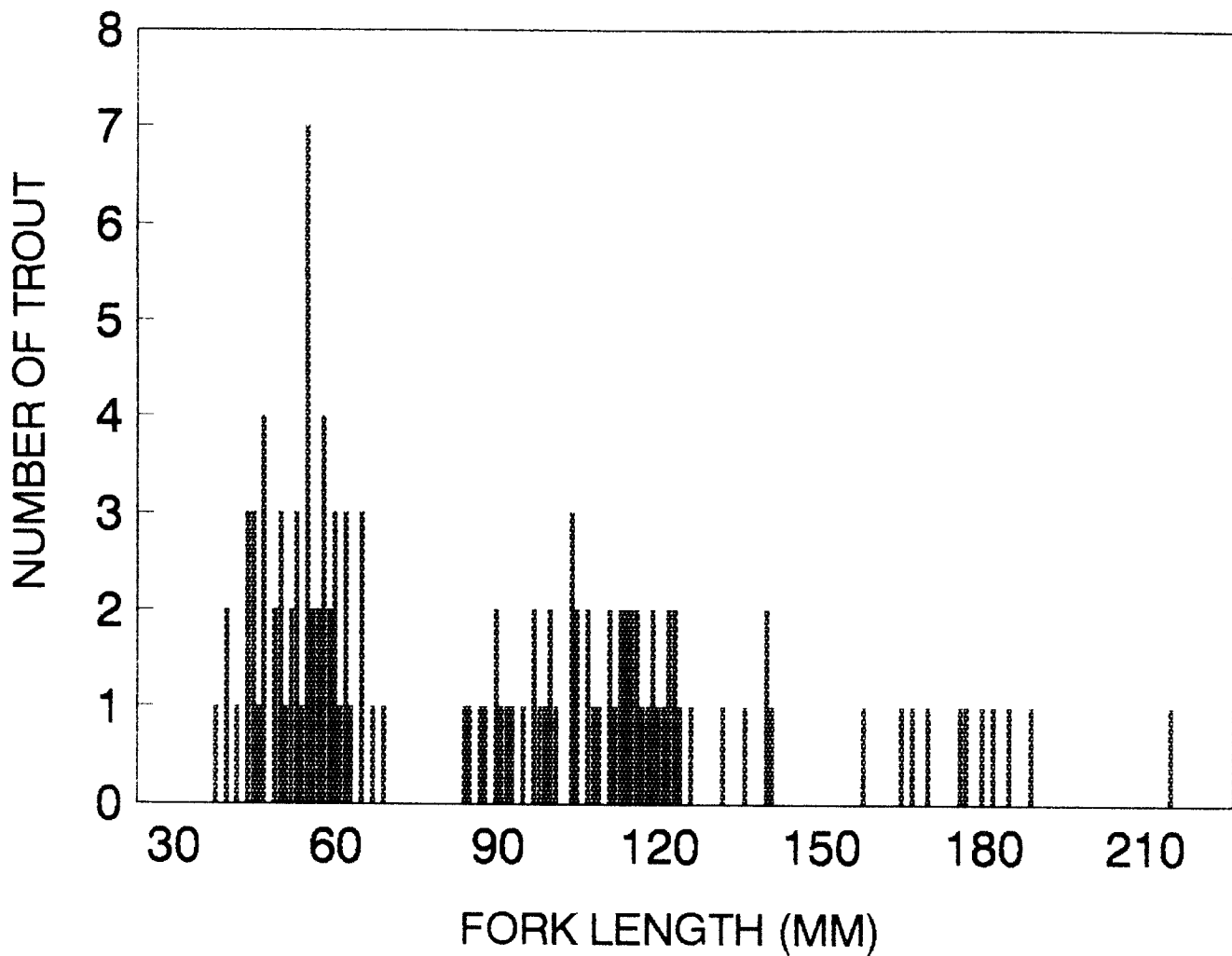


FIGURE 2. Length and observed frequency of rainbow trout caught in Little Grizzly Creek, Plumas County, 1990.

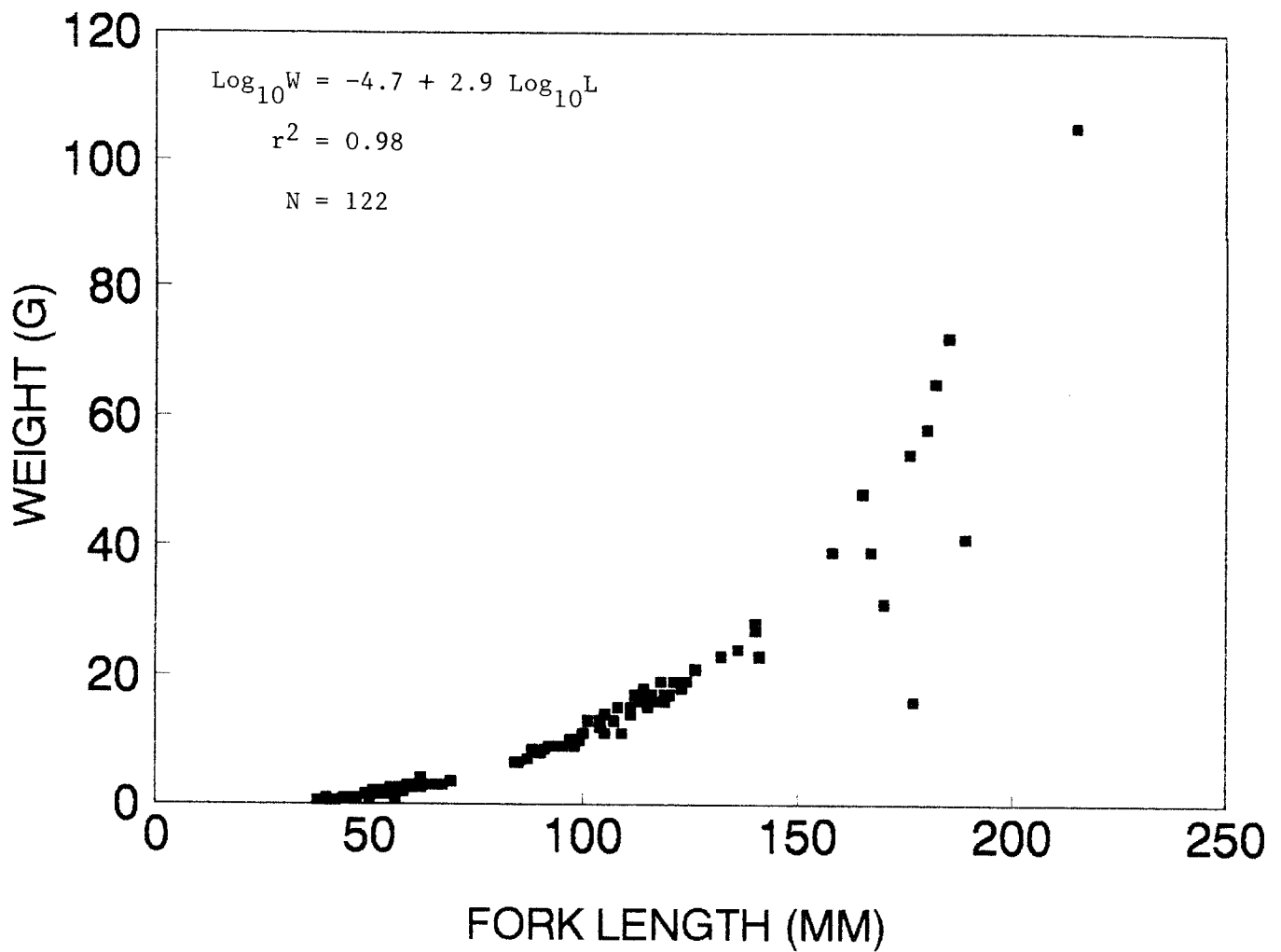


FIGURE 3. The relationship between length and weight of rainbow trout caught in sections of Little Grizzly Creek, Plumas County, 1990.

support populations of small trout as compared to trout in larger streams such as Indian Creek.

Little Grizzly Creek is much like Ward Creek in available habitat and in trout composition and biomass. Both creeks are well shaded, relatively steep streams that have predominantly cobble and gravel substrate with ample small pockets of quite water that provides pool habitat. They are also both cool and well aerated streams. They hold predominantly rainbow trout and are typical of tributary streams in Genesee Valley and Indian Valley.

TABLE 5. Estimates of Rainbow Trout Standing Crop and Biomass in Four Tributaries to Indian Creek, 1990.

Stream	Number of Stations	Average Number of Trout	Average Biomass (g/m ²)
Red Clover Creek	2	49	4.6
Hungry Creek	1	76	2.8
Little Grizzly Creek	1	131	4.6
Ward Creek	1	101	4.1
Average		81	4.2

LITERATURE CITED

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APPENDIX 1

PERMANENT FISH POPULATION STATION FOR LITTLE GRIZZLY CREEK, PLUMAS COUNTY 1990

Station 1 - Station 1 is located 3.2 stream km upstream from the confluence of Little Grizzly Creek and Indian Creek at an elevation of 1342 m MSL. The station is located at (UTM) 919 314. The stream within the station is primarily riffle (70%) with several small pocket pools (30%). It is 55.7 m long and has a surface area of 345.3 m² at 0.56 cms. Substrate is 50% boulders, 35% cobbles, and 15% gravel and coarse granitic sand.

APPENDIX 2

LENGTH AND NUMBER OF RAINBOW TROUT CAUGHT IN LITTLE GRIZZLY CREEK, 1990

Fork Length (mm)	Frequency of Occurrence	Fork Length (mm)	Frequency of Occurrence
38	1	112	1
40	2	113	2
42	1	114	3
44	3	115	2
45	3	116	2
46	1	117	1
47	4	118	1
49	2	119	2
50	3	120	1
51	1	121	1
52	2	122	2
53	3	123	2
54	1	124	1
55	7	126	1
56	2	132	1
57	2	136	1
58	3	140	2
59	2	141	1
60	3	158	1
61	1	165	1
62	3	167	1
63	1	170	1
65	3	176	1
67	1	177	1
69	1	180	1
84	1	182	1
85	1	185	1
87	1	189	1
88	1	215	1
90	3		
91	1		
92	1		
93	1		
95	1		
97	2		
98	1		
99	1		
100	2		
101	1		
104	3		
105	2		
107	2		
108	1		
109	1		
111	2		

APPENDIX 3

LENGTH AND WEIGHT OF RAINBOW TROUT CAUGHT IN LITTLE GRIZZLY CREEK, 1990

Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)
38	0.5	109	11
40	0.5,1	111	14,15
42	0.5	112	17
44	1,1,1	113	16,17
45	1,1,1	114	17,18,18
46	1	115	15
47	1,1,1,1	116	16,17
49	1.5,1.5	117	16
50	1,1.5,1.5	118	19
51	2	119	16,17
52	1.5,2	120	17
53	1.5,1.5,2	121	19
54	1.5	122	19,19
55	1.5,2,2,2,2, 2,2.5	123	18,19
56	1,2	124	19
57	2,2.5	126	21
58	2,2,2.5	132	23
59	2.5,3	136	24
60	2.5,2.5,2.5	140	27,28
61	3	141	23
62	2.5,3,4	158	39
63	3	165	48
65	3,3,3	167	39
67	3	170	31
69	3.5	176	54
84	7	177	16
85	8.5	180	58
87	7	182	65
88	8.5	185	72
90	8,8,8	189	41
91	8.5	215	105
92	9		
93	9		
95	9		
97	10,10		
98	9		
99	10		
100	11,11		
101	13		
104	12,12,13		
105	11,14		
107	13,13		
108	15		